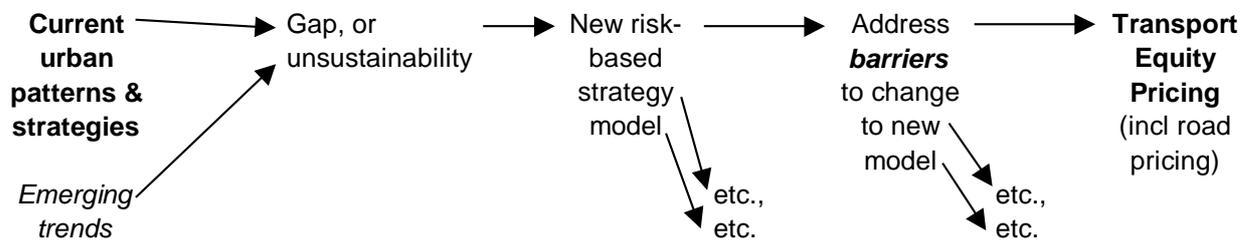




TRANSPORT PLANNING AND SUSTAINABILITY IN MELBOURNE

This article is summarised from a presentation made by Peter Hill, planning consultant with a2b strategies pty ltd, at two recent conferences of the International Union for Public Transport (UITP). Peter is also the Treasurer of the TCPA. A paper is being finalised for publication the UITP. Peter's conference topic was strategic planning in context of sustainability of current transport and land-use strategy settings in Australia. The graphic below summarises the development of his argument.



Sustainability has become a “spin word” for both private and public sector corporate management seeking to legitimise their policies. Sustainability should mean “the measure of a process, or system of processes, or state of affairs that can continue indefinitely without losses within this system eventually degrading its quality or halting it”. However, there are different meanings assumed for sustainability. Systemic sustainability is considered in 3 broad dimensions - ecological, sociological and economic.

Current urban patterns & strategies

Traditional public planning tends towards a “single-point” outcome or prediction upon which forward plans are made. However, such approaches are incapable of dealing with uncertainty in prediction, and the risk inherent in inflexible planning models.

Emerging trends

The emerging environment of physical resources, environment change and adverse demographic change is characteristic of a less stable environment, ie. discontinuous and unpredictable. Clearly there is discord between the land use and transport sectors’ administrative strategy and the emerging strategic environment. Appropriately adapted organisations should lead and drive major change, and thus set the pace for other stakeholders and decision-makers.

Gap of unsustainability

There appear to be high levels of risk to global and local communities from the impacts of exogenous factors (ie. climate change and continuing affordable energy supplies) arising from current and projected trends in industry, energy conversion, transportation and land-use systems. (Risk = likelihood or uncertainty of an event X its consequential severity). There are high levels of uncertainty that new and emerging energy and automotive technologies, such as hydrogen and fuel cells, can alone solve our looming problems in transport sustainability. Yet, the current cultures of public awareness, knowledge and government assume that predictable and achievable fixes will be available.

Risk-based strategic planning model

The appropriate strategic framework of analysis and decision-making should appraise the degrees of uncertainty of long term outcomes (over 20 years) which would lie within the current life cycle of planned infrastructure and of urban land-use structures. Such framework is inspired by business corporate “situational analysis” models which compare the situation “volatility” with the “change-orientation” of an industry sector and its management. These can be inter-woven with risk-analytical methodologies that evaluate the risks in each strategic option.

The author applied this methodology to the transport and land-use patterns and policy settings of Melbourne to gauge their “fitness” for likely emerging scenarios. Government policy in transport and land use administration is still changing or evolving incrementally by precedent, rather than “breakthrough”. Policy coordination and enforcement are inadequate.

To illustrate this, consider a paradigm change caused by previously undiscovered impacts (e.g. climate-change disasters) from the remote environment, leading to mandatory legislation enforcing pollution limits for human activities, assumption of sovereign (and not market) risk, and restrictions upon individual choices of action and contract. Anthropogenic greenhouse emissions would be regulated to levels achieving a stable 300 ppm of CO₂. *This restriction would require a 70% reduction across the board of all greenhouse emissions as at 2000*, including the transport sector.

This science-based scenario is less uncertain and “more likely” in the long-term period towards 30 years or more. Sovereign state edicts and mandates would be the drivers of changes in people’s behaviour, rather than in response to their existing behavioural or “utility” (ie. “market-based”) preferences. Political governance should actively educate and recruit the public for the change action, rather than the reactive “hands off” approach currently in force (ie. where “consumer choice” in travel and land-use locational behaviours is paramount)

Emerging trends

Primary non-renewable energy supplies are not close to a decline in production, except for petroleum (2005-2010; most reserves in Middle East) and natural gas (c. 2020; most reserves in Middle East and Caspian). Global coal reserves hold about five times the combined net energy of oil and gas reserves, and provide cover “for a century”.

The crucial problem arises in the link between climate change and emissions of methane (mostly from coal and natural gas extraction) and carbon dioxide from fuel burning. Given current technological and economic “benchmark” practices, natural gas use as final energy form is least “carbon-intensive” in its combustion products; coal is most carbon-intensive. However, replacing petroleum with petrol and diesel oil synthesised from natural gas as well as coal will increase carbon emissions and real costs. Hydrogen energy systems using natural gas or coal as prime resources will greatly increase overall carbon emissions, and appear to be unaffordable to most consumers.

Risk-based strategic planning model - results

Conservative and comparatively “conventional” practices appear likely to be the only environmentally, economically and socially *sustainable* approaches. These include *all current public transport modes*, energy-miser “green” cars (hybrid powered systems such as Honda Insight, diesels and electric battery/auxiliary engine cars), land-use reorganisation and use of IT to minimise physical trip generation and trip lengths. These sustainable options are

not completely mutual substitutes, but are major contributions to a “basket” of fixes. Ideally, and in the longer term, substitution by renewables could energise public transport, road transport and fixed energy plant with negligible carbon emissions.

This discussion has, so far dealt with ecological and related technological dimensions of sustainability. There are other (non-energy) factors that drive towards a less car-oriented and more transit (public transport)-oriented metropolis. These are the sociological and economic dimensions and these are at least as important as the “physical” factors addressed above. Residents of rural and outer suburban regions are disadvantaged by lower incomes and less access to activities relative to inner urban residents. The access disadvantage lies in longer travel distances and having fewer transit alternatives.

Public transport is a necessary component of a sustainable city. Public transport, even at current patronage levels in Melbourne, will reduce per capita energy use and emissions. The age-old quest is how to get the required modal shifts, say to 20%-30% of all trip distance, allowing for conservation impacts of “green” cars and Internet/telecommunications-assisted delivery of goods and services. One of the urban structural strategy components is, of course, maximally concentrated non-residential and high density residential land-uses in CBD and suburban nodes, inspired by Netherlands’ ABC zoning strategy, intensively served and interconnected by transit (clustering land use into nodes and connect by transit). The other is how to improve the attractiveness of public transport, cycling and walking versus car travel.

Barriers to sustainable change

A large “gap” exists between the measures of consumer-utility (satisfaction) for transit and car travel across most of Melbourne, ie. not within, into or from the inner 5 km radius centre. Expressed as travel time and cash-cost generalised “dollar” costs, this differential is around A\$1.20 – \$1.35 per km in favour of cars for an average (7.7 km) trip. Given this, how do we render urban behaviour sustainable, and in what time scale?

A model solution

A hypothetical “3 tiered” public transport system, based on existing rail networks, was modelled. Using this model transit time-cost cuts of A\$1.14 per km for an average trip are achievable, a large “carrot” of incentive. This system has

- (1) An interconnected grid-work of rail, light rail (LRT), and semi-express trunk (SET) bus routes within busways, all running at least 35 km/h (ie. higher) point-to-point speeds, intersecting at major activity nodes. These routes cater for longer trips (work, higher education, social). These new LRT and SET bus routes are spaced 3-5 kms apart in existing main arterial roads and spare reservations;
- (2) existing trams and frequent-halting feeder/local bus routes, also meeting at major activity nodes; and

- (3) “point-to-point” continuous multi-hire Demand Responsive Transit (DRT) and taxis to fill fixed-service gaps and cater for special needs travellers, eg. aged and mobility-impaired.

Such a system would operate at 5-10 minute peak and daytime headways for tiers 1 and 2, and at 10-15 minutes for tier 3. Service spans would be extended to at least 17 hours/day, 7 days/week. Strategy would rely on more transfers with other frequent-stopping bus & multi-hire DRT. Tier 1 and some tier 2 routes would be upgraded by progressive “conditioning” of the travel market by “staging” transit development with buses through “soft” to “hard-built” reserved busways, thence to LRT, etc. The strategy recognises that land-use structures are much slower to change than transport methods, and transport should be used to shape the evolution of land-use development. Melbourne’s land uses are still fairly hierarchical and zonal, and would support this cluster-connect system.

Direct motoring costs could be increased by A\$0.25-\$0.45 per km, mostly by charging for currently fixed motoring charges (insurance, registration, TAC), then congestion costs, carbon tax and a new urban improvement levy. *A large increase in oil prices of say US\$30 per barrel would add only \$0.035 per km.* These charges would provide a hefty “stick” to reduce car use. They would be paid for by pay-as-you-go electronic road pricing (ERP) visible to the driver. This would comprise odometer-linked in-vehicle tolling plus “discrete spatial” gantry or pole infrastructure-mounted tolling on designated transitways and “freight priority” roads. Gantry tolling (like CityLink) would ensure smooth transit-lane vehicle movement by restricting entry by private cars.

Transit improvements combined with direct-use road pricing would achieve overall generalised time/cash cost advantages to public transport. Long-term intensification of activity at urban transit nodes, plus pedestrianisation of these urban centres and development of safe cycling routes and facilities, could reduce current car usage in absolute terms and reduce (while shortening) car trips to below 50% of all trips by number. The increase in real motoring costs could cause a substitution of travel by further use of Internet and phone. However, extra behavioural incentives are needed to change modal choice.

In the Australian context, say for Melbourne, attempts to apply the above sustainable practices would yield uneven results and be politically unattractive, due to the relative social disadvantage of rural and fringe suburban residents. Any sustainable strategy to reduce energy transport usage, eg. travel demand management or new energy-lean cars, must avoid increased costs in disadvantaged regions.

Transport Equity Pricing

Actual transport development and pricing strategy should be tempered by social fairness. Electronic road charging would start at 8+ cents/km for registration and TAC fees for 2 years, and paid by vehicles fitted with tolling gear (\$100 per car) upon registration renewals. The ERP rate for vehicle and third party asset insurance would vary with the

individual driver’s established risk class, as now. ERP pricing would then rise to the full amount over say, a 3 to 5 year phase-in period, in selected pilot regions.

Road freight transportation would benefit greatly from reduced road congestion. Road transport already operates at high efficiencies and the freight task has little opportunity for substitution away from the road/diesel mode for the tonnage carried wholly within the metropolitan area.

This concept strategy focuses only on metropolitan areas. It would not apply to the countryside, where there is little prospect of land-use and public transport strategies greatly reducing transport energy use and emissions. Strategic focus on Melbourne and Geelong addresses over 75% of motoring effort within Victoria. Instead, a differential scale of car registration fees in rural areas could act as an incentive to buy fuel-miser cars.

The outlined system concept, termed **Transport Equity Pricing™**, is capable of generating from \$3.5 to \$8 billion or more each year within Melbourne, a major macroeconomic change, and requires equitable and productive channels of distributing the revenue if it is not to become an economically-burdensome tax.

The broad concept of Transport Equity Pricing is shown below. Key attributes would be:

- uniform distance pricing throughout metropolis
- ensure \$ fairness to all
- net subsidy transfer to outer metro areas
- → subsidise cut in fuel taxes, → rural redemption
- subsidise “loyalty” incentives for public transport usage
- privacy



Transport Equity Pricing Copyright 2001 426 strategies p16 16d

Annual General Meeting

The Annual General Meeting of the Town and Country Planning Association Inc. will be held at 7.00 pm on Tuesday, 12 March 2002 at Baker's Cafe Fitzroy. The formal part of the meeting will last no more than 30 minutes and will be followed by an informal meal - please see enclosed notice for details.

The draft agenda is as follows:

1. Apologies
2. Minutes of previous Annual General Meeting
3. Secretary's Report
4. Treasurer's Report
5. Election of Office Bearers
6. Other business

Election of Office Bearers

Nominations are sought for the following positions:

- President
- Vice President
- Secretary
- Treasurer
- Committee Members (8).

All members are encouraged to nominate. We urgently need members to fill leadership positions and to provide a full complement of general Committee Members: please do not assume that the current members of the committee are able to remain in their present positions. Committee meetings are held monthly (currently on the second Monday evening of the month).

A nomination form is enclosed. A signed or emailed nomination form must reach the Secretary no later than Friday 5th March 2002. The Committee will arrange for nomination forms to be signed by a nominator and seconder.

Metropolitan Strategy

The report on Round 2 of the Metropolitan Strategy public forums is now available. Media reports indicate that emerging key issues are the management of medium-density, with the government signaling that it will be concentrating future developments around railway stations and retail hubs (The Age, 21/1/02) and locations of future retail developments. Bix-box retailers apparently fear that land-use and transport integration will favour shopping centre owners because land in established shopping centres is too expensive for the big-box retailers (AFR, 8/1/02).

The Committee is particularly interested at the moment in receiving members' comments on the Melbourne Metropolitan Strategy Technical Report 8 on Activity Centres. This report contains not only some important recommendations for future planning, but also specific assessment of the functioning of existing centres.

The draft plan is now due "later this year."

Public Transport Education Program

The Public Transport Operators Marketing Group in conjunction with the Education Trust of Victoria, have completed a pilot of *Every Trip Counts*, a public transport education program targeting Year 7 and 8 students, and parents. The project, which involves also the EPA, Smog-busters and the Heart Foundation, is aimed to reach up to 13,000 students over 3 years. More information can be obtained from Education Trust of Victoria on 9614 5855 or from the website (www.everytripcounts.net.au).

Bulletin Contributions

The Committee would like, as part of its networking and informing role, to produce more regular issues of Bulletin. Members are invited to use the Bulletin to publicise local planning issues, report planning initiatives from local government which may make a significant contribution to sustainable development and provide models for other councils, and relevant activities of community groups.

In 2002 we would want to be able to comment on the impact of the new ResCode with respect to sustainable planning.

Information on new publications would also be of interest to the Bulletin. Letters (up to 250 words) on any issue may be accepted and reprinted. Letters should be checked for potential legal problems if there are any doubts about the nature of the material.

Membership Rates

Individual \$22; Community Group \$28; Student \$11
Institution/Library/Government Dept. \$55

Address for Correspondence

The Secretary, Town and Country Planning Association, Box 312, Collins Street West PO, Melbourne 8007.